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RESPONSES TO DOE COMMENTS PHASE II REMEDIAL INVESTIGATION WORK PLAN FOR MEDIUM PRIORITY SITES

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RESPONSE TO DOE COMMENTS ON PHASE II REMEDIAL INVESTIGATION WORK PLAN FOR MEDIUM PRIORITY SITES

GENERAL COMMENTS

1. The assumption of an Arapahoe Sandstone easterly dip of 7° seems very tenuous based on one sandstone correlation between wells The statement made (page 2-3) that this sandstone orientation is consistent with that observed at the 881 Hillside is not universally true Aside from the fact that a 7° east dip was not the operating assumption when the 881 Hillside Remedial Investigation was written, some well pairs at the 881 Hillside indicate a different dip orientation For example· well pairs 8-87BR and 3-87BR dip about 4° over their 325' east-west separation, nearly adjacent wells 59-87BR and 8-87BR show a shallow westerly dip However, well pairs 5-87BR and 45-87BR indicate about a 6° true dip and wells 8-87BR and 45-87BR show close to a 7° dip (8°) over their 1300' separation both assuming sandstone correlation The sandstone subcrop areas presented in Plate 2-3 should therefore be qualified with a statement that the constant dip angle is an assumption without universal support at this time. Since the well placement scheme assumes a constant dip angle and therefore a lower degree of correlation between wells, the number of wells and their placement as described is probably conservative Section 4 would be strengthened with a paragraph stating this latter point with an emphasis on the conservative nature of the well placement and include language that allows changing well location as information is gathered.

Response

The assumption of a 7° dip angle is somewhat tenuous, however, some assumption as to the dip angle is needed for development of the bedrock investigation Introductory statements to section 4 3 2 (Bedrock Flow System) were rewritten to state.
"Several Arapahoe Formation sandstones were encountered beneath surficial materials at the 903 Pad, Mound, and East Trenches Areas during the Phase I remedial investigation These sandstones are estimated to strike roughly north-south and dip approximately 7° to the east, however, further data are needed to support this hypothesis The investigative program is designed on the basis of the estimated orientation of the bedrock units If data generated by the program indicate a different orientation, relocation of some wells may be required "

In addition, a seismic geophysical program is being planned as part of the Phase II RI investigation to assist in determining the extent, orientation and correlation of the Arapahoe sandstones This program is briefly described in the introductory remarks of Section 4 3 2

SPECIFIC COMMENTS

1 Page 2-3, first paragraph, fourth sentence. Plate 2-5, Cross Section F-F', indicates that the sandstone in wells 25-87BR and 36-87BR are not correlated with each other, but are drawn as separate sandstone Correlation of the sandstone bases actually results in a westerly dip

Response

The text referring to the correlation of sandstone between wells 25-87BR and 36-87BR was incorrect and has been deleted. The sandstones encountered in these two wells do not correlate as shown on Plate 2-5, Cross Section F-F'.

2 Page 2-8, second paragraph, fourth sentence: This sentence is misleading as it implies that the ground water in the sandstone will only flow as far as the sandstone's extent. Mass continuity dictates that ground water must discharge into surrounding claystone. This sentence should be rewritten to indicate that the maximum ground water velocity, instead of flow, in a sandstone can only be maintained along the length of the sandstone lens.

Response

This sentence was deleted from the final sampling plan text as it is misleading. It was replaced with the following statements:
"The maximum horizontal ground water flow velocity in sandstone would be 75 ft/yr using a hydraulic conductivity of 83 ft/yr, an average horizontal gradient of 0 09 ft/ft, and an assumed effective porosity of 0 2 The geometry of the ground water flow path in the bedrock is not fully understood at this time because it depends upon the continuity of the sandstones and their interconnection. Evaluation of the lateral extent and degree of interconnection of the sandstone units is a primary goal of the Phase II hydrogeologic characterization at the 903 Pad, Mound, and East Trenches Areas "

3 Page 2-13, third paragraph· It is not clear in this paragraph if the soil samples described in the first sentence are external to BH 28-87 If they are, then their locations should be provided to evaluate if the potential source is bounded. If they are not, then this paragraph is incorrect since the results from one well cannot indicate the most contaminated area of the plume.

Response

The soil samples described in the first sentence are not external to BH28-87. They were collected from BH 28-87 and cannot be used to determine the most contaminated area of the plume The soil samples were collected to characterize soil contamination. The soil samples were not collected to determine the extent or most contaminated area of the plume, i e ground water. However, since BH28-87 is located near the center of the reactive metal destruction site, and volatile organic compounds detected in samples from BH28-87 were below health and technology based criteria, further soil sampling at this site is not warranted.

4. Page 4-7, first paragraph

It is not clear if the soil sampling procedure to be applied at the 903 Pad, Mound, and East Trenches Areas is the same as the described on page 4-12 for downwind trench samples or the surface (upper 5cm) samples described in the last paragraph on page 4-7. Whatever procedure is applied at the 903 Pad should stress near surface resolution to help estimate the volume of soil for removal

Response

Two types of surficial soil sampling will be performed in the remedial investigation areas and in the Plant buffer zone south and east of these areas. The same sampling techniques will be used in the 903 Pad, Mound, and East Trenches Areas as in the buffer zone downwind of these areas. Surficial soil scrapes will be collected using Colorado Department of Health sampling procedures over the 903 Pad, Mound, and East Trenches Areas and in the buffer zone. In addition, soil samples will be collected from test pits throughout these areas to assess the vertical distribution of plutonium in the soil profile